

S.N. 10/693,288

REMARKS

Claims 1-19 are pending in this application.

Claims 13-19 are withdrawn from consideration.

Claims 1-12 are rejected.

Election

The office action dated June 10, 2005 indicates that restriction is required between claims 1-12 and claims 13-19. The office action also indicates that a provisional election of claims 1-12 was made. The provisional election of claims 1-12 is affirmed. However, the restriction requirement is traversed for reasons below.

'102 and '103 rejections

The office action indicates that claims 1-5 and 7-12 are either anticipated by, or obvious in view of, Costrini U.S. Publication No. 2004/0063223. These rejections have been rendered moot by the amendments above.

Figures 1-9 of Costrini illustrate the fabrication of a magnetic tunnel junction. Figures 1-3 illustrate the formation of lower conductors 20, 22, 42, 44, an unpatterned pinned layer 110, a patterned free layer 122 and patterned insulating tunnel barrier 117. Figures 4-5 illustrate the formation of passivation sidewall spacers 82 for the patterned layers 117 and 122. Figures 6-8 illustrate the formation of a patterned pinned layer 112 and upper conductors 92 and 95.

Paragraph 20 of Costrini describes the formation of the sidewall spacers 82. A blanket dielectric layer 72 is conformally deposited, and then etched. The sidewall spacers 82 cover sides of the patterned insulating tunnel barrier 117 and patterned free layer 122. However, Costrini does not teach or suggest that his passivation sidewall spacers 82 cover the sides of the patterned pinned layer 112. Sidewalls of the patterned pinned layer 112 are covered by dielectric 86.

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Claim 1 has been amended to recite an anisotropically-etched spacer that covers the sides of a pinned layer. Because this feature is not taught or suggested by Costrini, claim 1 and its dependent claims 2-6 should be allowed over Costrini.

Additional features about forming a dual damascene conductor have been moved to a dependent claim (new claim 20). Claims 2 and 6 have been amended to depend from claim 20 instead of claim 1.

Claim 7 has also been amended to recite an anisotropically-etched spacer that covers the sides of a pinned layer. Therefore, amended claim 7 and its dependent claims 8-12 should be allowed over Costrini.

Double patenting rejections

The double patenting rejection has been rendered moot by the amendments above to claims 1 and 7. Neither US Publication No. 2005/0090111 nor US Publication No. 2005/0090056 claims a magnetic tunnel junction with anisotropically-etched spacers that cover the sides of a pinned layer.

Restriction requirement

The restriction requirement is traversed. The office action requires restriction of claims 13-19 because the magnetic tunnel junction of claim 13 can be manufactured without using a damascene process or reactive ion etching and, therefore, can be made using a materially different process. However, original base claims 1, 7 and 13 were limited to dual-damascene conductors and, therefore, could not be manufactured by a materially different process. Moreover, none of the original base claims recited ion etching. Only dependent claims 5 and 11 recited using a reactive ion etch to etch the spacer layers.

Moreover, the restriction requirement with respect to base claim 13 has been rendered moot by the amendments above to claims 1, 7 and 13. Features about the

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dual-damascene have been moved to dependent claims. Amended base claims 1, 7 and 13 do not recite any specific process (e.g., dual damascene, reactive ion etch) for forming a magnetic tunnel junction.

Finally, the restriction requirement is respectfully traversed because examining claims 13-19 would not place a serious burden on the examiner (see MPEP § 803, Restriction – when proper). The documents applied against claims 1-12 could also be applied against claims 13-19. No additional search would be required. Examining claims 13-19 might present a burden, but not a serious one.

The examiner is respectfully requested to examine all claims and withdraw the claim rejections. The examiner is encouraged to contact applicants' attorney Hugh Gortler to discuss any issues that might remain.

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